REPORT OF PROCEEDINGS

NORTH CENTRAL REGION LIVESTOCK PRODUCTION

and

MARKETING CONFERENCE

MAY 6 - 8, 1957
at
Kansas State College
Manhattan, Kansas

UNITED STATES DEPARTMENT OF AGRICULTURE
FEDERAL EXTENSION SERVICE

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NORTH CENTRAL REGION LIVESTOCK PRODUCTION AND MARKETING CONFERENCE

Kansas State College, Manhattan, Kansas
May 6, 7 and 8, 1957

Monday, May 6

Chairman - Lot F. Taylor, Kansas

8:00 a.m. - Registration

9:00 a.m. - "Welcome" - Director Harold E. Jones, Kansas

9:10 a.m. - Introduction and Announcements - Lot Taylor, Kansas

9:15 a.m. - "Implications and Application of Consumer Preference for Meats" - Elmer Kiehl, Missouri

9:45 a.m. - Discussion

10:00 a.m. - Demonstration - "Relationship Between Carcass and Live Animal Valuation" - Don Good, Kansas

10:45 a.m. - Discussion

Chairman - Wendell Moyer, Kansas

1:00 p.m. - Flint Hills Grass Tour

4:30 p.m. - "Demonstration Method Used in Scoring Bulls" - John Knox, New Mexico

5:30 p.m. - Steak Fry

7:00 p.m. - "Looking Ahead," Dean A. D. Weber, Kansas

Tuesday, May 7

Chairman - George Strum, North Dakota

8:30 a.m. - "Progress Report on Identification of Dwarf Carriers and Possible Related Implications" - John Lasley, Missouri

9:15 a.m. - "Applying the Principles of Performance Testing to Cattle and Sheep" - John Knox, New Mexico

10:15 a.m. - Recess

10:30 a.m. - "Evaluation of Swine Testing Programs" - J. A. Whatley, Oklahoma

Chairman - Charles E. Bell, Jr., USDA

1:00 p.m. - Performance Testing - group session

Group I - Beef Cattle - Henry Holzman, South Dakota, Chairman.
Consultants - Keith Gregory, USDA, and Elmer Kiehl, Missouri

Tuesday, May 7 (continued)

Group II - Swine - Ed Miller, Michigan, Chairman. Consultants - Jim Whatley, Oklahoma and Jake Hoefer, Michigan

Group III - Sheep - Henry Mayo, Indiana, Chairman. Consultants - V. E. McAdams, Kansas and Vern Felts, Wisconsin

3:00 p.m. - Tour of experimental feed lots and pastures

Wednesday, May 8

Chairman - R. M. McWilliams, Iowa

Methods and Techniques in Extension Livestock Programs

8:30 a.m. - "Kansas Beef Demonstration Program" - Lot Taylor, Kansas

9:00 a.m. - Discussion

9:15 a.m. - "Feeder Sales and Demonstrations" - Harry Russell, Illinois

9:45 a.m. - Discussion

10:00 a.m. - Recess

Chairman - Herb Barnes, Ohio

10:15 a.m. - "A New Technique in Swine Disease Control" _ George A. Young, Nebraska

10:35 a.m. - Discussion

10:45 a.m. - "Raising Hogs Under Confinement" - J. A. Hoefer, Michigan

11:15 a.m. - Discussion

Chairman - Hank G. Zavoral, Minnesota

1:00 p.m. - "An Evaluation of Beef from the Carcass Viewpoint" - R. A. Merkel, Kansas

1:30 p.m. - Committee Reports - Beef Cattle, Swine, Sheep

Following Reports - "Where Do We Go From Here?" - Rufus Cox, Kansas

Adjournment.

IMPLICATIONS AND APPLICATIONS OF CONSUMER PREFERENCES FOR MEATS 1/

For many generations man has attempted to transform and adapt his environment to his needs. Probably his most consistent efforts in developing animals for his needs were those in adapting horses for military needs. In the Roman period it was for speed. Later, in the Medieval period, increasing weight of armor stimulated breeding for greater size of animal.

Development of meat producing animals stems from a more recent period. While the ancient Egyptians were the first to evolve a beef-type animal from their native longhorns, it was not until late in the eighteenth century that substantial progress was made in the development of beef cattle. This urge to improve and adapt cattle, hogs and sheep for meat purposes was part of modern industrialization. Gradual increase in per capita incomes and growth of cities provided a market for meat animals. Improved breeding practices developed rapidly in response to this new market. As one author stated, "A definite economic need existed for an animal of a different kind."

What were the specifications of this new kind of animal? One writer stated in 1832, 125 years ago, that beauty of shape of animals too often depends on fashion and fads, and stated that intelligent breeders should now pay more attention to the things that butchers notice. The best sign of good flesh is that of being marbled, having fat and lean finely veined or intermixed.

In 1900 a writer reporting on the first International Livestock Show stated, "'Old Hooker,' the steer that won the championship as the best Hereford of any age for beef, was found when slaughtered to consist mainly of a mass of tallow, while 'Sam,' a steer that stood low in the estimation of the judges of the cattle alive, was found on slaughter to be beautifully marbled in his flesh, and was awarded the highest premium by the judges of the carcasses."

"It has developed that consumers and meat dealers everywhere demand more meat and less tallow in the beef they buy, more flesh and less fat in meats of all kinds. Hereafter, producers of meat animals must look more to the development of muscle than heretofore."

Contribution from the Missouri Agricultural Experiment Station, Journal Series No. 1759. Approved by Director. The author gratefully acknowledges the contribution of Professor V. James Rhodes, Department of Agricultural Economics and of Professors D. E. Brady and H. D. Naumann, Department of Animal Husbandry and members of the research team in meat preferences.

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 6, 1957, by Elmer R. Kiehl, Professor of Agricultural Economics, University of Missouri.

". . . that, hereafter, it is not to be how much fat can be put on, but how much flesh?"

This same statement would not be out of context with today's situation 57 years later. It implies also that maybe we have not made as much progress as we would like to believe.

It seems to me that we have had over the years two sets of standards or specifications for beef. The breeders and feeders standard in which beauty and form of the animal was considered the goal for production of meat animals. Two, the butchers standard which considered important in meat, marbling and veining of fat, and in which cut-out yields were also considered. A vague idea developed that these two standards coincided with the consumer's notion of excellence or preference. Over time the breeder and feeder and the butcher standards have moved closer together. And if consumers failed to recognize the points of quality set up by the experts of these groups we generally have heard in the past the recommendation -- "we'll just have to educate the consumer."

Over the years all of us no doubt had in mind this vague dual standard of perfection in the fattened animal toward which we oriented the selection of the animals, their feeding and handling. Is it based on overall eating satisfaction of meats? Or is it because this high degree of finish is so costly to produce that we implicitly attach to it a value in terms of the increased cost? In other words, because it costs more to produce, it must be better. Maybe we have become enamored by our own definition of quality where the concept of quality and excellence might be unconsciously associated with the higher cost and length of feeding rather than what important groups of consumers desire in meats. For many other products we tend to associate quality or excellence with sale price.

Many livestock producers feel that they can no longer ignore marketing processes and markets. For years farmers thought, and quite naturally, that all they had to do was to produce the products and to deliver them to the farm gate and somehow the marketing system would absorb them. Many now believe that they have a concern beyond the farm gate. In the period of a sensitive "buyers market" many other sellers have learned that their markets cannot be taken for granted. Sometimes this lesson has been a painful one as in the case of some industrial products and in the case of several agricultural products--for example, the cream producers. Fortunately there was a market for fluid milk that could be further developed!

It is very easy to assume complacently "that it will not happen to beef or hog producers." An educational and promotional program with statements such as "beef is a prestige product" and that "pork is good nutritionally," etc. will only provide weak straw slogans in the battle against changes in basic characteristics of the market for beef and pork.

Production of beef cattle and hogs can no longer be done in isolation with respect to markets and market potential. It is true that

prices tend over the long run to reflect changes in consumer preferences and demands. But in this process the adjustments in production called for by the market may be unresponsive to basic changes in demand and maybe even too late! Market research and preference research must anticipate these basic changes in preferences in the market.

How have we fared in the market place for pork and beef? In case of pork, the share of the consumers' disposable income spent for pork has dropped more than one-fourth since 1949. In the case of beef, there has been an increasing tendency to apply larger price discounts on the heavier weights of cattle. There are many who believe that these are omens of a basic change in the demand for meat.

Part of the basic change in demand has arisen from reduced market needs and desires for fat. Probably more important is that self service retailing of meat has given consumers the opportunity to become more selective than in the older service butcher shops. Hence such factors as size of cut, fat trim are important considerations in meat merchandising. The butcher can no longer act as an intermediary.

These changes have stimulated interest and research on a broad front in an effort to win back part of the 25 percent loss in the pork industry's share of the consumers' dollar that occurred in the last seven years--and also to prevent something similar from happening to the beef industry.

What has been accomplished? First, we need to have in mind clearly the objectives of this research. Basically, it is to discover what consumers want. But, there are differences in opinion as to usefulness of such a discovery. One opinion is that this information could be used to develop a promotional program designed to persuade and educate consumers to want what we happen to have for sale. The other view is that the discovery of what consumers want should determine what we should have for sale. Most research workers have this last objective in mind in approaching this problem.

Once having committed ourselves to discovering what consumers want as being an essential first step we have found that it is quite another thing to discover them. Our experience in consumer preference research over the past five years has been that it is discouragingly difficult. It is quite easy to get results.

One idea that has to be discarded is the concept of the "representative" or "average" consumer. We say the "American housewife" wants thus and so, but usually we are generalizing from our own ideas of what she wants. For example, the "average American" eats almost no lamb--only around 4 pounds per capita, per year. This is a "fact" about the consumption of lamb and mutton and would lead an uninformed observer into assuming there is no market for lamb in this country. Yet, there is a lamb market because a minority of consumers are not "average" American consumers but eat substantial quantities of lamb and mutton.

It appears also that our so-called expert concepts of what constitutes excellence of meats need to be modified so that they coincide more closely with the concepts of a substantial group of meat consumers. These concepts formed a quarter of a century ago need to be modified in terms of today's market. There was little concern then about fat, obesity and the possible association of fats with heart ailments.

What, in general, have preference studies on beef thus far shown? These might be briefly stated as follows:

1. Most consumers prefer leaner beef. Fat, as such, is undesirable to most. Most of us are probably convinced of this consumer attitude by now.

2. The eating characteristic most desired by most consumers is tenderness. Putting on extra finish may not contribute as much to tenderness and desirability of beef as was once believed. A number of studies lead one to the conclusion that the association of fatness or finish to tenderness is relatively low. Tenderness seems to be more associated with youthful beef animals.

3. Present wholesale grades, either packer or federal, do not assure consumers uniformity in eating satisfactions over time. In an eating or taste panel study conducted at Missouri two years ago involving nearly 3,000 comparisons, the judges were able to detect differences in the steaks from Prime and Good loins (two grades apart) only about 1/2 of the time. On the other hand, this same panel was able to detect eating differences among steaks from loins of the same grade over 1/2 of the pairs of loins tested.

This test suggests that as far as <u>eating characteristics</u> are concerned that our present wholesale grade standards do a relatively poor job of classifying beef carcasses. The ideal would be classify those carcasses or wholesale cuts which are very similar in eating characteristics <u>within</u> a grade. It is not only possible, but very likely, to find steaks from a Good grade carcass which taste similar to those from a Prime grade carcass and vice-versa.

In many products, quality repeatibility over time is quite jealously maintained by manufacturers. Cake mixes and many other products have consistently a high standard of performance one package with another. The housewife expects to get a good cake consistently using such and such brand. In meats, however, you have no doubt, experienced eating dissatisfaction with some cuts purchased from the same butcher from one time to another. This is a sympton of the inadequacy of present wholesale standards in failing to assure repeatability in eating satifactions.

4. Since tenderness and leanness apparently are so important to consumers it would appear that the criteria for selection and classification should be modified. Somehow a better way must be found so that tenderness can be assured. There must be a better way than merely looking at beef carcasses on the rail. Calibration by the eye apparently no longer is adequate. This is a most difficult problem.

5. Sometimes it is said that preference research suggests that all people prefer lean beef and that this means the so-called lower grades. This is not suggested by the research at all. There are many people who prefer, for example, Choice over Commercial, and Prime over Choice steaks. Yet after having registered a preference for the general characteristics of a particular grade these same groups are unable to obtain consistent eating satisfaction from the "grade" they preferred.

The results of these studies suggest then that we have a building project on our hands. That is, we have to determine the combination or bundle of characteristics desired by important consumer preference groups. If we are producing for the market, this is the blueprint from which we must start. This blueprint would be a set of standards that would assure the important consumer groups that the "standard" that they have selected can be expected to perform consistently in terms of their eating satisfactions.

It would appear that in the future the beef cattle industry, processors, and fabricators must breed, feed and process in terms of this blueprint rather than from one that does not fully satisfy the needs of consumers. In a sense this is an architectural problem. The design must embody the important features that consumers want whether it is houses, cars or meat. The development of the blueprint, that is consumer grades, is the most difficult part of this task.

There are two other groups of studies related to preference results which could have a great impact on the beef industry that should be mentioned in passing.

First, extensive work is being done on chemical and high temperature aging methods of tenderization. That is, beef carcasses of all degrees of finish and varying in natural tenderness can be made uniformly tender. This might become commercially practical. If it does, it will have a tremendous effect in that it removes an important criteria of grade, that is, tenderness. It would likely have a great effect on consumer selection among grades. The implications for beef production are obvious.

Another group of studies are those dealing with frozen meat distribution. If the technical bugs can be overcome and if consumers generally are ready to accept meat in frozen form, it will result in some drastic changes in meat merchandising. Some foreseeable changes are that we will see more retail packaging of meat at the packer level (or at the chain wholesale level). There will be less need for skilled butchers

in the retail store. Retailing of meats could become more of stocking items and less processing. The bones and trim waste losses that now occur at the store and in the home would be saved and more effective uses made of it at the packing house. We would not be paying freight on bone and wastes. We can mechanize loading and storage of meats. There are real opportunities for savings all along the line.

If this develops, and some say that within 10 years we will see frozen meat distribution fairly well established, you can expect also some effect on the type of beef animals produced. I suspect that packer buying practices will become more rigid. They will want to buy animals with highest possible yields of packageable meat consistent with tenderness. Net cut-out yields of animals in terms of meat cuts will be pinpointed if this trend develops. Those processors and packers now in the business tend to package for their trade carcasses of the younger and of the so-called leaner and less wastier carcasses.

Just a word about preference studies dealing with pork. There has been considerable discussion of the meat-type hog. As you know, we have now grade standards for pork based largely on length and the fat/lean ratio. These standards differentiate the cut-out yield to packers and processors. In other words leaner meatier hogs are worth more as raw material to processors than are the fatter hogs.

Some research has been undertaken to determine whether these wholesale carcass grades can be used also as consumer grades. Our studies and those of others suggest that they cannot. Consumers cannot differentiate eating qualities between grades of pork cuts. This is particularly true with pork chops and other cuts which have fat deposited externally. That is, eating qualities of the lean meat from U. S. No. 1 carcasses are essentially the same as that of U. S. No. 2 or U. S. No. 3 when the external fat on the cuts of each grade is trimmed off.

In case of both the beef and pork studies, you no doubt will recognize that the work dealing with consumer preferences is still in the early stages. However, it is unmistakably clear that meat products can and must be designed to increase consumer satisfactions. Consumers are willing to pay the price necessary to obtain increased satisfactions from meats. We can well take the lessons of many other products which have improved greatly in the last few years. Enough evidence is available to indicate the direction we need to go particularly in the case of pork.

Whether or not we can hold our own for at least the traditional share of the consumers' dollar in the period ahead depends on how adaptive the whole industry becomes in meeting the changing and more critical demand. Nutrition and esthetic factors will be of greater importance as we move further away from the bare essentials of living to one of increasing incomes and abundance. A fact we must recognize that a society with wealth has the opportunity for and likes to exercise the right to choose. Can we exploit this desire by producing what consumers want? All segments of the industry have a stake in meeting this challenge. All have a role to play in successfully facing up to the problem.

All of us in educational work no doubt have become discouraged at the complacency in various parts of the industry to move in the direction indicated. How often have you heard some rationalizations that run like this in the case of hogs?

> "After all we are consuming all we produce. True, some people don't like as much fat as we produce, but after all we have a lot of corn. Feeding it to livestock is better than having corn piled up in government stocks. Anyway, this meat-type hog is just a poor-doing hog and is an expensive feeder. And besides more markets do not pay anymore for the meat-type hog. Since these meat-type hogs cost more to produce, we have to have more for them."

From another segment of the industry the rationalization runs about like this:

> "Most of these so-called meat-type hogs are meatless wonders. Since we can't detect them live, we have to take them as they come--just as the farmer produces them. As there are only 10-15 percent meat-type hogs on the market, we can't do much on the meat-type hog program. Retailers can't handle meat-type hogs because there isn't enough to supply them anyway. If a retailer wants them, the packer will ask a premium. And handling two kinds of pork in the same store fouls up the management. Furthermore, we are not certain that consumers will want meat-type pork--at least they will not pay more for it."

This is the sort of circular rationalization you no doubt have heard many times. You know, of course, that these rationalizations are based on error and lack of understanding. Somehow there must be a way found to break into this spiral of complacency.

In this country we prefer other methods, rather than force or edict, to meet challenging situations. We rely on educational methods. You are in key positions in your work to promote understanding of the necessity of tieing in our production with the blue-prints of preferences and desires of consumers.

We may have to fight off the desire to produce exclusively for a show ring or butcher standard. These standards appear to be the ultimate in our production capability. But, in the long pull, by following such a standard we will have lost a part of the market. The tie-in of breeding-feeding with the blueprints that consumers desire is important if we are to maintain a healthy livestock economy. Your efforts in continually reassuring farmers and the industry of the necessity of adjusting their production to these ends is crucial toward meeting the challenge of the changed market situation.

PROGRESS REPORT ON IDENTIFICATION OF DWARF CARRIERS AND POSSIBLE RELATED IMPLICATIONS 1/

A summary of the research work on dwarfism in beef cattle conducted at the Missouri Agricultural Experiment Station was presented and slides were shown to illustrate the results. It was pointed out that several different phases of dwarfism have been studies and a number of graduate students have contributed to the overall study of this inherited defect in beef cattle.

The first studies measured the response of dwarf and normal appearing animals to insulin injections by following the blood sugar levels for several hours after such treatment. Data on many animals showed that the dwarfs had a lower initial blood sugar level than normal appearing animals, it fell to a still lower level after insulin injections and, on the average, a much longer period of time was required for the blood sugar level to return to normal. Carrier cows showed an average trend similar to the dwarfs in the level to which their blood sugar decreased after insulin, and they were also slower than the pedigree-clean cows in returning their blood sugar to the initial level. So much overlap was noted in the response of individual carrier and pedigree-clean cows, however, that this test could not be used for the detection of carriers except in extreme cases where some of the carriers responded in the same manner as the dwarfs.

The failure of the dwarfs to respond to insulin injections, as measured by the return of the blood sugar level to normal, indicated a possible adrenal or pituitary insufficiency. For this reason, a study was made of changes in the kinds and numbers of white cells in the blood after insulin injections. Definite differences were noted in changes in the white cells after insulin in carrier, pedigree-clean and dwarf animals. From these studies a test was devised in an attempt to detect carriers of the dwarf gene. The test was based on increases in total cell numbers at one and at two hours following insulin injections. These total cell numbers were later found to include either large platelets or fragments of red and white cells in addition to the regular white cells.

Most pedigree-clean animals showed a peak in the total cell numbers at one hour after insulin, and this was followed by a decrease at two hours. The carrier animals, on the other hand, showed a continuing rise in total cell numbers at one and at two hours after insulin.

Differential white cell counts also showed differences between carrier and pedigree-clean cattle following insulin injections. In the carriers, there was an average increase in the percentage of lymphocytes

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1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 7, 1957, by John F. Lasley, Department of Animal Husbandry, University of Missouri.

at one hour after insulin with little or no change in the percentage of neutrophils. In the pedigree-clean animals, however, the percentage of lymphocytes showed a definite decrease and the neutrophils a definite increase at one hour following insulin. It has been observed that some animals do not give a clear cut reaction either way and no attempt is made to classify them as to genotype. A second test at a later time often makes their classification more definite.

Blood sugar changes as well as changes in white cell numbers after the injection of insulin and other hormones are being studied further. In addition, the effect of sex, breed, age, season and other factors on the response of cattle to insulin are being investigated.

Preliminary studies have given some indication that the blood sugar and white cell changes after insulin might be helpful in detecting animals with a faster potential rate of gain. To date, some data have been obtained on a small number of animals which were fed individually for a period of 140 days or more. A much larger number of animals should be studied before definite conclusions can be drawn on this phase of the investigation.

It is felt that the measurement of the ability of animals to respond to stress offers a promising line of research in the future. It is entirely possible that the manner in which an animal performs is determined by the balance of hormones in the body and this may be inherited. Possibly the selection for extreme individuals may result in the improper balance of hormones which in turn may result in poor performance. It was pointed out, however, that this is a new approach to studies in measuring the potential performance of farm animals and much work needs to be done before any definite claims can be made as to the definite value of such studies.

APPLYING THE PRINCIPLES OF PERFORMANCE TESTING TO CATTLE AND SHEEP 1/

The basic problems of animal breeding have not changed since the time of Bakewell. It is still a question of finding the best animals and developing sound plans for mating them. The most ardent advocate of performance testing doesn't differ from the staunchest supporter of the show ring on these questions. Their differences arise over which are the good animals and what is the best way to find them. It must be admitted that these are enough to cause some heated arguments. Although goals may not differ from those commonly held, there are important differences in methods.

Performance testing is not limited to plans now in use, for the principles may be applied to any phase of production. It is confined to factors which effect amount or kind of production, however, and these traits will be evaluated by factual measurements when possible. Where objective tests are lacking, estimates well grounded in experience or research are used. It may be necessary to use such estimates for some time in the future and one of our problems will be to test for their validity and improve their accuracy.

Before the principles of performance testing can be used in commercial cattle and sheep improvement they must be applied to animals in large numbers. In order to do this the relationship between quantity of production and efficiency must be recognized. This may come as a surprise to those unfortunate enough to have heard or read some of my previous statements for I have objected to using quantity of production as a measure of efficiency when comparing animals of different mature sizes. Output is a good measure of the efficiency of two machines of the same size but a poor measurement of machines of different sizes. In a practical breeding program we are not interested in these size variations. In most cases we do not want small animals for various reasons. If such animals are preferred, they are selected by visual means before the performance test is applied. Feed intake gives valuable information but there are disadvantages which offset the added accuracy. The most obvious are:

1. only a few individuals can be tested
2. animals are removed from their natural environment
3. the test period is short

The overall record of a bull at 20 months of age may be as reliable a measure of his capacity as a more detailed record of a five month's test period.

It is not enough to deal with traits which effect production. We must select one or a few traits which provide the greatest chance for

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1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 7, 1957, by John H. Knox, Head, Animal Husbandry Department, New Mexico College of Agriculture.

economic progress. The choice will depend on the economic advantage to be gained, their heritability, and the accuracy with which they can be measured. The latter two are associated, for a factor which cannot be accurately measured will appear to have low heritability. The amount of previous selection which has been applied to a trait is another factor which may influence the progress to be expected. From this point of view there are three categories; factors of such importance that they always should receive priority, those which have been improved to the point where further progress will be slow, and those which have been neglected to the extent that need for attention has increased beyond their normal importance. At the risk of starting an argument I might site; efficiency of feed utilization, conformation, and milk production, respectively as examples of each category. It should be remembered, however, that a specific breeding program should fit the situation in the herd, which may be different from that in the breed as a whole.

After the factors to be used have been chosen, the best practical measurements should be applied. The New Mexico wool improvement program is an example of good judgment and ingenuity in this respect. It was decided that length of wool should receive first consideration. Most New Mexico fine wool was short. It is important in determining both amount and price of clean wool. Length of wool is one of the most heritable of major economic traits. It can be measured accurately either on the sheep or in the fleece. Concentration on length of wool resulted in remarkable gains. As selection for this factor alone reached a point of diminishing returns, simple and accurate devices were developed for measuring density and later amount of clean wool under field conditions.

In meat production the scale is a simple, well tested measuring device. Qualitative measurements which can be applied to live animals are lacking or in the experimental stage. It may be that we shall have to depend on subjective evaluations. It seems reasonable to expect that these estimates should have an appreciable relationship to either production or carcass value. Since we already have a good measure of production it might simplify the problem to try to formulate standards which would reflect carcass grades only.

We need more information on visible factors which have significant effects on carcass grade. All of us think we have a good idea what these are, but we have been wrong enough in the past to cause us to question our judgment. One thing known is that short legs and bodies are not among the things which materially improve carcasses. The importance attached to these characteristics accounts for much of the failure to get significant correlations between grades of feeder cattle and carcass grades. You may ask how every one could be completely wrong for so many years. They were not completely wrong. The blockiness which has been recognized as characteristic of good cattle from the beginning is due to two groups of factors, those producing massiveness and those producing shortness. The first group is positive and related to greater production. The latter group is negative and limits production. The greatest degree of blockiness is

obtained when these factors are combined, resulting in the leading show animals and most favored breeding animals of the past. Sometimes unfortunately shortness was considered the essential factor and when it was present alone small animals without special merit resulted.

There are factors such as tenderness and flavor which are difficult to evaluate in the live animal. This is a good field for research, for a common mistake is to start research after the need is critical. They are better research problems, however, than matters for serious consideration in actual breeding programs. The present need is to find ways of producing beef at costs which will return a profit when sold in competition with other expanding food supplies. Beef is the preferred food as recent experience has shown. With lamb, the situation is different and difficult. The supply per capita has become so small many people have no chance to develop a taste for it. With these facts in mind we shall devote our attention to factors of production.

If weight is to be the measure of meat production, the next question is when it should be taken? Weights to be of greatest value should be taken at relatively early ages because: 1. selections are made at this time, 2. we are interested in weight at market age, 3. production and soundness should be the guide for selecting females after they reach producing age. In this case heavy weight may be due to low production as much as to desirable genetic factors. The usual times are at: birth, weaning, and about 1 year after weaning. Birth weights give valuable information in an experimental herd and are related to production. In a practical breeding program they are difficult to take and it is doubtful if they give information not obtained better from later weights.

Variations in weaning weights within a herd are determined by age, sex, health, and growth capacity of the calf or lamb and age and milk production of the dam. Of these we want to select for three; growth, health and milk production. The influence of each is hard to identify at this stage but since all are desirable this is not important. Correction may be made for sex for the purpose of records but in a commercial herd this is taken care of by selecting within each sex; usually females only. Elaborate corrections for age of dam can be made but we think they need apply only to cows younger than four and older than nine. In a range herd which calves heifers at three and ships old cows at ten, we take care of this situation by working the first calf heifers as a group and making selections based on the average of their calves. We usually disregard the 10-year olds for there are only a few of them. In this way accuracy is obtained without time consuming calculations while cattle are being worked.

This leaves differences in age of the calves and lambs as the only difficult problem. Age may be over compensated for, if we consider early calving a desirable trait as it surely is. In our sheep improvement program differences in age of lambs have been ignored and improvement has been made in lamb as well as wool production. There seems to be two workable plans for a commercial herd: one, select the

better heifers regardless of age, which would be recommended in any case when yearlings are bred; two, keep a record of birth dates. This should present no great problem in a farm herd of 50 cows or less. On the range the job is more difficult but not as serious as some may think. If the herd is checked daily while calving, new born calves may be marked with little extra effort. On some ranches it may be practical to brand calves at 10 day intervals during the calving season. They may be marked and age recorded at this time with sufficient accuracy. Some ranchers, perhaps the majority, will think neither of these plans is practical. In these cases selection must be done with little reference to age, using judgment to settle borderline cases, and the final result may be about the same. If yearlings are bred the latter plan may be preferred.

The selection at weaning may be the major one for those who sell calves. Perhaps this is as it should be for factors which increase weaning weight are emphasized, especially milk production of the dam. It should not be the final one, however, for we need to know the animal's ability to do well when removed from its dam. The second selection usually will be made at the latest convenient time before breeding. If yearlings are bred this will be just before the breeding season. When two year olds are bred it may be done in the fall before they are bred, for economic reasons. The latest practical date provides the most effective selection.

If cattle are of the same sex and similar age, differences in weight at this time will be due principally to ability to grow rapidly, use large amounts of feed efficiently, and thrive under existing conditions. This selection does something more than produce big cattle. It finds those that are outstanding in vigor and well suited to the environment. In the course of an animal's life vigor and adaptation to its environment show in numerous ways, such as: mature weight, condition, rate of reproduction, and longevity. With young animals vigor is most closely associated with weight for age. When this is selected for the other desirable traits are obtained. A plan for selecting replacement ewes and heifers which puts maximum emphasis on weight has been effective in obtaining females which maintain production during severe drought. Of all the measurements we have made on heifers the one most highly correlated with future production is prebreeding weight.

Here two questions will arise: 1. Will such a program produce animals which are too large?

2. Where does grade come in?

In answering these I shall confine myself to cattle where I feel a little more competent. No one can answer the first question definitely until some experiments now underway have progressed farther. When the answer is given it must consider production efficiency and market demand. I don't know how it is in all places but I don't see how we are going to get animals too large to do well on our southwestern ranges while we select breeding animals which do best on those ranges.

The market presents a more complex problem and a somewhat confused one. All my life the ability to fatten quickly and efficiently has been considered a prime requirement of good beef cattle. Now I see statements that would lead one to think that growth without fattening is a desired condition. I doubt if tastes change so suddenly. I assume ability to put on the required finish quickly is still a good trait even if the desired condition is less than in former years. I can recall when about the only one looking for lean beef were poor people who wanted the most edible meat for their money. Now if you add the increasing number of obese and old people being advised to eat less fat to the decreasing number of poor people you have a very large part of our population indeed. We must remember that big cattle may be slaughtered younger at light weights. It is only a question of reaching the required finish by the time they attain the desired weight. With improved fattening rations and increasing demands for leaner beef from younger cattle we may be assured that we have quite a ways to go before we produce cattle which cannot be fattened at popular weights. We may gain further assurance with the knowledge that there will be plenty of small cattle regardless of what we do.

This question of quality and grade always comes up. It will receive attention in any practical plan of improvement. With few exceptions, only in experimental programs will selection be made for production alone. There is only a question of the importance to be given to grade. But, if we follow the principles of performance testing we will consider only those factors which effect the amount and quality of the final product. As I have said before too little is known about these factors and their relative importance. Several stations are doing good work on this subject and useful information will be available soon. It is important to stress here that even allout selection for production and weight does not have the dire effect on conformation often pictured. Such selection increases those factors of conformation we have described as massiveness. It is only those producing shortness which are decreased. You can not have heavier animals and small animals at the same time.

Application of the principles of performance testing becomes increasingly important when we consider more mature animals already in the breeding herd. Few things have done more harm to a breeding program than discarding good producing females for real or fancied faults in appearance or shedding tears over some "beautiful individual" which has failed to produce properly or has some genetic unsoundness. I would not care to see a female after she was added to the herd if I could have adequate reports on her production and health. The principles of performance testing are applied to mature breeding animals by measuring their production and estimating their prospects for continued production based on vigor and soundness.

A plan has been outlined hurriedly for using measured performance to find the better animals. This is only part of a breeding program. It is important to develop a plan to make best use of these animals. We are still using new methods to treat old principles. The one we are dealing with here is mating the best to the best in order to produce

more of the best with a few even better than their parents because of fortunate gene combinations. None of the principles of breeding has been more universally accepted and applied when adding animals to a herd, either in purchasing sires or choosing replacement females. We suggest applying this principle farther by herd classification. This means dividing the animals so that the better females are placed with the better sires. Range cows are chosen by the calves at side and ewes for fleece and body weight which is a good indication of potential lamb production. If a herd is divided into two equal parts in this manner half the calf or lamb crop will have both a sire and a dam which are average or better. If all animals were allowed to breed at random, one-fourth the crop would have two superior parents, one-half one superior and one below average parent, and one-fourth two below average parents.

The purpose is to produce more superior animals from which replacements may be picked. You may ask what the advantage is in herds which are uniform. It must be admitted that greatest progress is made in herds lacking uniformity but we have never found a large herd in which this is not the situation. You hear of animals "as alike as peas in a pod." In a few cases they may be, in color and appearance; and they make a pretty sight. But have you seen their calf crop? It will be surprising if there isn't a range of 200 pounds in weight to say nothing of those which have no calves at all. With such variation there is plenty of opportunity for effective classification.

Here we find more use for performance testing. One advantage of meat and wool production is the ability to measure productive capacity in animals of both sexes before breeding age. These measurements are sufficiently reliable to be used for classification. They are about the only records which can be obtained on range sires where progeny testing is impossible. They are adequate if they are followed by later observations of development and vigor. The situation is different with females. In addition to providing genes for high production, females must perform the mother function. There is no way of measuring this before breeding. So we use performance tests in two ways with cows and ewes; first to measure their own production of meat or wool; and second to measure their calf or lamb production. This has a special place in herd classification. Young females go into an "A" herd on the basis of their own production. They stay in that herd on the basis of their reproduction. This is particularly true with cattle where the only income is from calves produced.

I hope the foregoing is enough to show that the principles of performance testing not only may be used but must be used in every phase of a sound breeding program. This does not mean that you must agree with any certain plan now in use or that you subscribe to any of the conflicting ideas about the relative importance on weight versus type or quality. It does mean that whatever your objective, it will be reached by using the animals which perform those functions best when measured by the most accurate means available. The application of these principles need not be limited to small numbers of animals tested under controlled conditions. They are applied best to large numbers in their natural environment. By such methods we may hope to keep the cattle and sheep industries abreast of progress being made in competing lines of food production.

EVALUATION OF SWINE TESTING PROGRAMS 1/

1. Performance testing provides selection information for:
   a. Individuals
   b. Sib tests on litter mates
   c. Progeny tests on parents

2. Individual feeding tests (for boars).

Table 1. Expected improvement from selection on individual performance for one trait at a time.

Trait	Standard Deviation	heritability	Saving boars from the best: 10% select. diff.	10% genetic superiority	50% select. diff.	50% genetic superiority	70% select. diff.	70% genetic superiority
Daily gain, lbs.	.17	.3	.30	.09	.14	.04	.08	.02
Feed Economy, lbs.	40	.3	70	21	32	10	20	6
Probe Backfat, ins.	.17	.4	.30	.12	.14	.06	.08	.03

Table 2. Actual selection differentials in selecting the best 10% of the individually fed boars within each line and season at Ft. Reno on overall performance and soundness of legs.

Trait	Selection Differential	Equivalent to selecting boars from the best
Daily gain	+ .16	45%
Feed Economy	- 31	50%
Probe backfat	- .11	60%

3. Sib tests on litter mates

Table 3. Correlation between the genotype of a pig and the average phenotype of its n tested litter mates (Freedeen, 1954).

Condition	Values of G	Values of M	Values of E	n = 1	n = 2	n = 3	n = 4
I	.5	.1	.4	.36	.43	.47	.49
II	.5	.3	.2	.36	.40	.42	.44
III	.3	.1	.6	.28	.34	.38	.42
IV	.3	.3	.4	.28	.32	.34	.36

(See footnote on next page)

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 7, 1957, by James A. Whatley, Jr., Professor, Animal Husbandry, Oklahoma State University.

G = heritability of the trait
M = variation due to non-genic (environmental) differences between litters
E = variation due to non-genic (environmental) differences between litter mates

Condition I. A situation in which the traits are highly heritable and the environmental correlations (common environment) between litter mates are low. Carcass traits such as length and backfat thickness may very nearly fit this condition.

Condition II. Traits of high heritability with a marked environmental correlation between litter mates.

Condition III. Traits of medium heritability with a low environmental correlation between litter mates.

Condition IV. Traits of medium heritability with a marked environmental correlation between litter mates. Rate of gain and feed economy as measured at testing stations probably fit this condition fairly well.

Table 4. Possible rates of genetic improvement in selection giving equal weight to own performance and sib performance. Genetic improvement with test litter of 2M/2F (two barrows and 2 gilts) = 100. (Freedeen, 1954)

	Composition of test litter					
G	2M/2F	1M/oF	2M/oF	1M/1F	3M/oF	2M/1F
.5	100	104	108	106	107	106
.4	100	103	107	105	107	105
.3	100	101	106	104	106	105
.1	100	97	104	102	105	104

4. Progeny tests on parents.
   a. Progeny tests are most useful when (1) progeny test information becomes available early in the tested animal's lifetime, (2) the reproductive rate is low, (3) heritabilities are low, and (4) the basis for making early selection is relatively inaccurate (Dickerson and Hazel (1944).
   b. In swine the reproductive rate is rapid and heritabilities of performance traits are generally high. Progeny test information is not available until the parents are at least 18 months of age or a year after such information is available as a sib test.
   c. Progeny performance tests are not likely to be as important in genetic improvement as individual and sib tests.
   d. Progeny tests can be a useful supplement to sib and individual tests and in pedigree selection.
5. Effect of pre-test environmental conditions on performance records at a central testing station.
   a. herd differences
   b. station differences
6. Possible genetic impact of central testing stations on the swine population.
   a. Genetic improvement from central testing stations in Denmark and Sweden.
   b. Genetic improvement from central testing stations in Canada.

KANSAS BEEF DEMONSTRATION PROGRAM 1/

For more than 25 years Kansas State College Extension Service has collected beef records on the recommended systems of livestock production in Kansas. Jerry Moxley, former livestock Extension specialist, started the program, collecting records on creep fed calves. Later stocker and feeder calves and deferred steers were added to the program. Among the advantages of the program to Kansas Extension workers are the following:

First, gives relatively accurate records on beef operations on practical Kansas farms.

Second, it is a wonderful tool for training county agents.

Third, it secures both local and State publicity on the results of various beef systems.

Fourth, gives the local county agent accurate figures which he may use in winter meetings and as subject matter in his local county.

The records are placed in the agents' hands and he in turn distributes them to the livestock men in his county and assists them in completing the record. Extension specialists check the records for accuracy and summarize them. Summaries are sent to the cooperating livestock people and to the county agents, but are not for general distribution.

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by Lot F. Taylor, Extension Specialist, Animal Husbandry, Kansas State College.

FEEDER SALES AND DEMONSTRATIONS 1/

The use of feeder cattle sales is primarily a method of beef cattle improvement insofar as livestock extension work is concerned. The feeder sales, organized through a local committee, provide an incentive for culling and selection in the cow herd, use of better sires, breeding for a well-bunched, early calf crop, early dehorning and castration and a number of other good management practices which contribute to desirability of the calves at weaning time from the standpoint of the feeder buyer. The interest of extension in working with producers is to improve income and by encouraging better practices to increase producer income over a period of time. The best example of the use of feeder cattle sales in our area are those held in Missouri.

Beef cattle grading demonstrations have been used to some extent in Illinois to teach market grades and classes of livestock. Market agencies cooperate in the meetings assisting with the grading and estimating current values while extension specialists discuss feeding and management practices recommended for the particular grade of livestock under discussion.

In swine extension work three general types of demonstrations are now being carried on. The first is in a study of live market hogs where those in attendance at the meeting are given an opportunity to actually grade hogs according to official USDA grades. Grades are first discussed and demonstrated by an extension specialist. The first meeting is followed by a second meeting, held two days later, at which the carcasses are used from the hogs graded live at the first meeting. Carcass cut-out information is made available on one hog of each of the principal grades.

A second type of meeting is on brood sow selection. Gilt pigs in the good litters are marked at farrowing time and farrowing date recorded. Selections are made at about 4-5 months of age or at about 170 to 180 pounds in weight. Gilts are probed for back-fat thickness at the same time. Weight is adjusted to a 180 day basis and back-fat probe to a 200 pound weight. Selections are made first for type and soundness, secondly on the basis of weight for age and then on the basis of leanness. Specialists assist in starting this work in the counties and most of the follow-up is done by the farm adviser working with the local Swine Herd Improvement Association.

The third type of swine demonstration is the so-called "Boar Testing Station" carried on in cooperation with the Illinois Swine Herd Improvement Association. A boar and a litter-mate barrow are fed side by side in individual pens. Weight and feed records are obtained and the pigs removed from test at about 200 pounds in weight. The

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1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by Harry Russell, Extension Specialist, Animal Science, University of Illinois.

barrows are slaughtered for carcass information and the boar weighed and probed for back-fat thickness. Additional littermates, not on test but on full feed at home, are also weighed and probed for additional information. There are some variations from this plan.

Breeders are interested in identifying superior breeding stock in their herds and the operation of the Station serves as a good swine feeding demonstration since gains usually surpass those obtained on the farm.

Market lamb pools which livestock specialists have assisted in starting have shown the increased value of fat lambs of desirable weights. Consignors are given an opportunity to see the lambs graded and to examine lambs of different grades. This grading and pricing by grade has given impetus to the native flock program and encouraged better management practices.

In addition we have about 550 grade and purebred flocks enrolled in the production record project. Pounds of lamb and pounds of wool per ewe produced by July 1 are the principal measures of success. A summary is returned to all cooperators and each has an opportunity to compare his own record with flocks of approximately the same number of breeding ewes.

A NEW TECHNIQUE IN SWINE DISEASE CONTROL 1/

Current research in swine diseases has indicated good likelihood of a stable source of clean stocks for repopulation. At present, clean stocks are being obtained for experimental purposes. The techniques used appear to have potential practical application. Basically, the techniques involve a disease-free developmental period for swine followed by continued disease control through segregation and continued isolation. The term quarantine is not applicable because the animals are not diseased.

Nature has provided the tools by which we can obtain disease-free pigs from dams living within a diseased environment. After the first 30 days, the five-layered swine placenta is impervious to passage of infectious agents. Thus, the pig at birth is free of disease. He also lacks antibodies or the protective substances which he needs to survive in his natural environment without colostrum. He can, however, survive without colostrum provided he is placed for the first weeks of his life in an environment that will protect him from infectious agents. These relationships of the placenta to disease-free pigs and moderation of environment by colostrum provide the tools we need to obtain disease-free pigs for repopulation purposes.

Disease-free pigs are obtained from their dam 2-4 days before they would be farrowed by an operation called hysterectomy. The word simply means removal of the womb. The dam is hoisted by her hind legs and lowered head first into a barrel containing a small amount of dry ice. The dry ice turns to carbon dioxide gas which anaesthetizes the sow. The belly is opened. The gravid uterus is removed and is passed through an antiseptic lock into an enclosed hood. The pigs are quickly torn out of the uterus so they may breathe air rather than the fluid in which they are suspended. Air in the hood has been filtered so it contains no germs. The navels are tied and dipped in idoine. Length and weight of the pig and number of teats are determined. Teeth are clipped and ears are notched for identification. All pigs are examined carefully for any abnormalities. The pigs are then transferred under cover to special brooders and are fed a modified cow's milk. Later they are adapted to farm-type management. The dam is processed for food since the carbon dioxide gas has no deleterious effects on the meat.

Our first experience with hysterectomy techniques in disease control was obtained with the Hormel Foundation herd at Austin, Minnesota. This herd, since its inception in 1944, has been plagued by a multiplicity of swine diseases. A concept of the performance of this herd is obtained by figures obtained the last year before the hysterectomy techniques were applied. This was one of the better years for the herd. Even then only the best performing litters to 56 days were saved for brood stock and are represented in Table 1.

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by George A. Young, Professor, Animal Pathology, University of Nebraska.

The 23 lb. 56 day weight is not a commendable one and is a reflection of disease among these suckling pigs. The low 154 day weight was attributed mainly to bloody dysentery or bloody scours. This could certainly not be considered economical pork production.

Table 1. Comparison of performance of pigs farrowed by their dams with performance of first and second generation pigs by hysterectomy.

Group	No. Pigs	Av. wts. 56 days	Av. wts. 154 days	feed req. (lbs.)/ cwt. gain
Not disease-free	225	23	132	421
First generation disease-free	115	24	156	358
2d generation disease-free	119	33	183	401

The weaning weights of our first generation disease-free pigs were very near those obtained by pigs suckling their dams in a diseased herd. It must be remembered that with these first pigs we were pioneering in management and diets satisfactory for colostrum-deprived pigs. We were the first to rear such pigs successfully and we have needed to learn a great deal about them.

A significant performance figure with our first generation disease-free pigs was the 156 lb. weight at 154 days. Although this is not especially good as 154 day weights go, it was a substantial increase over the 132 lb. weight at the same age by pigs suckled by their dams. More efficient use of their feed was also realized. The diet fed was essentially the same for both groups.

Many of the things learned in rearing the first generation of disease-free pigs aided us with the second generation. Average weight at 56 days was 33 lbs. and at 154 days 183 lbs. Over 85 percent of the pigs born alive on this program were raised to 154 days. We consider this performance to be completely acceptable for straight line Chester Whites.

In more recent experiments we have applied the "know-how" gained with the first and second generation pigs to two relatively small groups of pigs (Table 2). One group consisted of 42 Chester Whites at birth and 39 at 154 days when the experiment was concluded. This is a total livability of 93 percent which is excellent by comparison to the usual 60-70 percent figures. The other group consisted of 41 three-way cross-bred pigs at birth with 36 remaining at 154 days. The breeds crossed were Minnesota No. 1, and Minnesota No. 2, and Poland China. Livability among these pigs of 88 percent is also considered good.

We wish to detail somewhat the manner in which these pigs were handled because it is important that colostrum-deprived pigs meet increased complexities of environment gradually. The pigs were started in individual isolation units and kept in them the first week on a milk diet. From 1 to 4 weeks, the pigs were grouped up to 10 and fed limited amounts of milk with a pre-creep ration and water continually available. Pigs were handled as a group of 75 from 4-8 weeks and fed

a standard creep ration. When eight weeks old these pigs were placed in a herd consisting of 250 pigs of all ages and fed a growing fattening ration. Performance of these two groups of pigs is summarized in Table 2.

In this comparative study, the Chester White pigs performed about the same as the second generation, disease-free pigs already discussed. Quite likely we had nearly reached the in-line maximal performance. We consider the performance of the three-way crosses excellent and would not expect to find many swine producers who would quarrel with us.

Table 2. Comparative Performance of Disease-free Chester White and Cross-bred Pigs*

Group	No. pigs start	No. pigs finish	Ave. Weights 56 days	Ave. Weights 154 days	Feed req. (lbs.)/ 100 lbs. gain
Chester White	42	39	40	187	390
Crosses	41	36	40	215	370
Crosses** (not disease-free)	48	36	36	163	358***

*Crosses were Minnesota 2X Poland China gilts X Minnesota No. 1 boar.
**For comparative purposes, this group was reared on the farm from which the dams supplying the disease-free crosses originated.
***These pigs on pasture. Allowance of 10% for pasture feed would raise the figure to 395 lbs. (Adjustment based on Minnesota Station figures for these breeds).

Growth performance of crosses of inbred lines is notedly good. Thus to the skeptic, the figures we have presented for the crosses would be attributable to the genetic capacity of these pigs to grow. While we admit the importance of heredity, we advocate that best expression of growth capacity can be made in an environment free of disease. This point is best made by use of performance data of pigs raised under farm conditions (Table 2). The dams were the same crosses as those from which the disease-free crosses were obtained. The gilts for both groups were managed alike on the same farm up to farrowing. Those gilts for hysterectomy were sent to slaughter 2-4 days before term for removal of their pigs. The other gilts farrowed on the farm and reared their litters there.

It is rather sobering to have demonstrated that well-bred pigs on a well managed farm on good diets may not perform up to their genetic capacity to grow. The relatively minor disease problem responsible also attributed to a total mortality of 25 percent. This was more than twice that encountered with similar stock raised in a disease-free environment.

We expect the practical-minded hog raiser to object to the manner in which we have reared these experimental groups of hogs. It does require special equipment, skilled personnel, and the number of pigs which could be raised would be small. To this we agree. We do sincerely

believe, however, that these techniques may be effectively used to control and eradicate swine diseases in a practical manner. The approach we plan to use is as follows:

1. OBTAIN ASEPTIC PIGS. These would be obtained from good breeding stocks by hysterectomy and handled as reported previously.

2. REAR PIGS IN ISOLATION. Pigs would be housed in individual isolation units from birth by hysterectomy until one week old. During this period they would be fed cow's milk modified by addition of egg, vitamins, and mineral. From one week until four weeks of age they would be housed in groups of 8-12 in isolation brooders. They would be adapted to eating solid feed during this period.

3. MATURE ON FARMS. Pigs previously adapted to eating solid feed and water would be placed in groups of 10-20 on farms from which all other swine had been removed. Ordinary rearing methods would be employed except that no new so-called "normal" stock would be introduced and contact with other swine would be avoided by the farmer. Stock would be raised to maturity.

4. RESUME NORMAL BIRTH. The stock which was reared to maturity on farms would be kept there and used as brood stock. Normal farrowing would be resumed, with precautions to avoid introduction of disease. When additional blood lines need to be added, boars from other farms on the same program could be introduced.

5. RESTOCK OTHER FARMS. The clean stock obtained on primary farms by steps 1-4 would be used to repopulate other farms. These considerations for disease control should be observed: (a) Complete depopulation of swine from the premises; (b) Mechanical cleansing and disinfection of premises; (c) Introduction of stocks only from farms which are on the same program or from the central agency providing primary stocks; (d) Avoidance of direct contact with other swine by the farmer and indirect contact in so far as possible.

From what we have already learned about disease-free swine, the program just outlined has good likelihood of being immediately applicable to disease problems of swine. A five-year pilot study was initiated at the University of Nebraska Agricultural Experiment Station in the spring of 1956. It is hoped that such a study will make it possible for us to develop specific recommendations for the swine industry to aid in disease control.

RAISING HOGS UNDER CONFINEMENT 1/

Swine production is changing. Many factors are contributing to this change, but the primary motivation is the desire to increase the profit opportunity in raising hogs. Competition is becoming very keen and there is little margin left to subsidize the inefficient producer.

The problems of the swine industry are many, but fortunately the potential of the pig is great and with advancements being made on all fronts there is hope that solutions will be found for the more serious problems.

Because of the pressure to increase volume (income) and to improve efficiency of swine production at the same time there is a great deal of interest in raising hogs under confinement or on concrete. A few years back the very thought of such a program would have brought a chorus of "It can't be done," "too costly," "impractical," "pasture is the best feed we have," "parasites and disease would make it impossible," etc.

Now we know that it (raise pigs on concrete) can be done but we are still not too sure as to when and where and if it should be a recommended practice.

Before going too far in this discussion I want to emphasize that as is usually the case there is more than one way to do something successfully. The successful individuals are the ones who adopt the system which best fits their own peculiar needs. I do not intend to promote one system at the expense of the other. Pasture has a place in swine production and so does concrete. The choice will be determined by the individual situations. The most efficient way may be combinations of both.

Some of the factors responsible for the interest in raising hogs under confinement are:

1. Improved swine nutrition
2. High priced land ($300-1000 per acre)
3. High priced labor
4. High corn yields; continuous corn
5. Parasite and disease problems
6. Multiple farrowing
7. Automation
8. Environmental factors
9. Early weaning
10. Meat-type hog programs
11. Availability of credit
12. Uncertainty of good pasture
13. Fence building

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by J. A. Hoefer, Professor, Animal Husbandry, Michigan State University.

The following tables were discussed:

Table 1. Swine Production Costs

Item	Old Estimates %	Current %
Feed	75-80	70
Labor	7-9	10-15
Buildings and equipment	3	6
Other costs (taxes, vet., overhead, etc.)	12-14	15

Table 2. Dry-lot vs Forage Feeding*
(Av. 25 experiments)

	Av. da. ga.	Conc/100 lbs. gain	Conc. saved per A forage	Amt. pork credited 1 acre forage
Dry lot	1.106	404	-	-
Forage 17 pigs/acre	1.355	356 (-12%)	1172	329

*Smith's - Pork Production 2d Edition pp 238.

The results in Table 2 really demonstrate the value of a good ration over a poor one rather than a fair comparison between pasture and dry lot.

Table 3. Pasture vs Good Drylot Rations for Growing Fattening Pigs*
(av. 10 tests)

	Pasture	Dry lot
No. pigs (all tests)	161	154
Av. initial weight	51	51
Av. final weight	207	206
Av. daily gain	1.44	1.43
Feed/100 lbs. gain		
Corn or other grain	318.7	313.8
Supplement	44.8	66.9
Minerals	1.5	1.6
Total	365.0	382.3

*Carroll and Krider - Swine Production 2d Edition pp. 375.

Table 4. A Feedlot Demonstration[1]

	Poor Ration[2]		Good Ration[3]
	On Pasture	Dry Lot	Dry Lot
Av. initial wt.	64	63	62
Av. final wt.	204	154	212
Av. daily gain	1.43	0.93	1.68
Av. feed per day	6.7	4.6	6.7
Feed/100 lbs. gain	466	500	397

[1]L. E. Hanson - Feed Age Oct. 1955
[2]Poor ration - 97% ground corn, 3% complex mineral mix + 10 gm. aureo., 10 mg B_{12}/ton.
[3]Not included in original demonstration - included here because of similarity of age and weight.

Table 5. Pasture vs Dry lot for Growing Pigs[1]

	Average Daily gain		Feed/100 lbs. gain	
	Pasture	Dry lot[2]	Pasture	Dry lot[2]
1951	1.60	1.63	327	349
1952	1.58	1.63	332	369
1953	1.45	1.67	328	340
1954	1.44	1.72	362	376
Average	1.52	1.66	337	358

[1]L. E. Hanson, Feed Age Oct. 1955.
[2]Dry lot rations contained 5.5% alfalfa meal in 1951, 52 and 5.0% in 53 and 54.

Table 6. Comparison of Dry lot and Pasture for Producing Pork[1]

	Dry lot	Pasture
No. pigs	71	72
Av. initial wt., lbs.	40	40
Av. final wt., lbs.	197	191
Av. daily gains, lbs.	1.64	1.57
% increase	4.5	
Daily feed	5.07	4.70
Feed per 100 lbs. gain	310	299
Shelled corn, lbs.	270	265
Supplement, lbs.	40	34
Feed cost per 100 lbs. gain[2]	$8.49	$8.05

[1]Purdue University Mimeo. AH 184, Purdue Swine Day 1956.
Pasture feeding saved 2% corn, 15% protein supplement, 3.5% total feed, reducing feed cost by 5.2%[2](no charge made for pasture). Gains 4.3% slower on pasture.

Table 7. Summary of 2 years Results Comparing Pasture and Dry lot[1] (Data Combined for Free-Choice and Complete mixed rations)

	Dry lot	Pasture
No. pigs started	120	120
Av. initial wt., lbs.	24	24
Av. daily gain, lbs. (approx. 100 days)[2]	1.38	1.26
Av. daily feed, lbs.	4.17	3.58
Av. feed per lb. gain, lbs.	3.04	2.96
Feed cost per lb. gain, cents	9.63	8.72

[1]University of Illinois, Animal Science Department, AS-422(1955), AS-435(1956)

[2]Animals were removed for slaughter at approximately 210 lbs. Feed and gain data limited to period when all animals were on test.

Pigs in dry lot gained 9.4% faster and ate 13.7% more feed per day. On the other hand pigs on pasture required less feed per pound of gain (-2.6%) and because of lower supplemental consumption (when fed free choice) the feed cost of the gain was approximately 9.45% less.

Table 8. Estimated Daily Feed and Water Consumption and Manure Production of Hogs

Weight	Feed	Water	Manure
50	3.0	6.0	2.7
100	5.0	10.0	4.6
150	6.5	13.0	6.1
200	8.0	16.0	7.6
250	8.3	16.6	7.9

Table 9. Approximate Labor Requirement per Sow and Two Litters[1] (48 Sows)

Period	All Portable Housing	All Permanent Housing
Breeding and gestation	3	3
Farrowing to 4 weeks	20	15
Nursing - 4 to 8 weeks	10	10
Growing and Finishing	22	22
Total Hours	55	50

[1]Bauman, Purdue Mimeo ID-19, 1957

Table 10. Housing and Equipment Investment and Annual Use Cost per Sow[1,2]

	Investment per Sow		Annual Use Cost per Sow	
	Portable Housing	Permanent Housing	Portable Housing	Permanent Housing
Farrowing	$ 57	$ 91	$ 7.31	$ 8.46
Nursing	47	49	6.14	4.98
Growing and Finishing	119	131	14.57	12.83
Sow Shelters	23	23	3.00	3.00
Total	$246	$294	$31.02	$29.27

[1]Bauman, Purdue Mimeo ID-19, 1957
[2]48 Sows, 2 litters, 2 groups

Raising hogs under confinement is limited largely to pigs from birth to market weight. Sows can utilize pasture to good advantage and every effort should be made to take advantage of this ability.

Good pasture furnished protein, minerals, riboflavin, pantothenic acid, niacin, and carotene. As a result the supplement used on pasture is usually somewhat more economical than the one needed for dry lot feeding. Another very important advantage of pasture is that there is no manure to haul.

Factors to consider in a "pasture" vs "confinement" program:

1. Cost of production
   a. rate of gain and feed conversion
   b. labor - feed and manure hauling
   c. housing and equipment investment
   d. parasite and disease
   e. interest, vet., overhead, etc.
2. Quality of rations
3. Volume
4. Management and planning
5. Control of environment
6. Multiple farrowing
7. Value of land
8. Stability and flexibility
9. Specialization
10. Meat-type hog - marketing

Table 11. Summary

	Pasture	Confinement
1. Rate of gain		Higher
2. Feed/gain	Lower	
3. Investment		Higher
4. Annual use cost - equipment		Lower
5. Labor		
Feeding and watering		Lower
Manure hauling	Lower	
6. Environmental control		Better
7. Parasite control		Better
8. Managerial requirements		Higher
9. Trend		Increasing

AN EVALUATION OF BEEF FROM THE CARCASS VIEWPOINT 1/

Any evaluation of beef involves a consideration of the three factors -- conformation, finish and quality. These factors are considered by the beef grader in determining carcass grade and by the beef wholesaler and retailer in establishing the price or value of the carcass or cut.

Conformation refers to the form, i.e., the amount of muscling or degree of meatiness. From the retail standpoint, conformation is the least important of the three factors and in addition it is not a major factor in determining carcass value. Nevertheless we cannot evade the conformation factor in our evaluation, since it is primarily the muscling or lean meat that the housewife considers when she selects beef. In addition, 75 percent of the value of a beef carcass is in the thicker, meatier, wholesale cuts, i.e., the round, loin and rib and the latter two, which comprise approximately 27 percent of the total carcass, account for 45 percent of the value. Although the association between conformation in the live animal and the carcass is relatively high, there is as yet no completely reliable guide to muscling in the live animal. However, cattle which possess wide, full loins and ribs, and deep, bulging quarters usually produce carcasses of comparable thickness and meatiness in these cuts. The rib eye area at the 12th rib is commonly used as a guide to muscling in the entire carcass. A recent report from the Ohio station indicates a correlation coefficient of .853 between the area of the eye muscle at the 12th rib and percentage of meat throughout the entire carcass. Geneticists from the USDA found that 72 percent of the difference in area of the eye muscle was accounted for by inheritance. These observations should encourage the beef breeder toward selection of cattle that produce economical gains and also possess the more desirable muscling characteristics.

Finish, or outside fat covering is important to the extent that a certain amount is necessary to insure quality. In general the higher the quality of the meat the more acceptable from a tenderness, juiciness and flavor standpoint. Finish, particularly on roast cuts provides a natural baste during cooking to keep the meat juicy. However, there is a point beyond which finish has no additional influence upon quality but actually decreases carcass value, that is when excessive fat must be trimmed away. Distribution of finish also influences value, i.e., carcasses with a uniform fat cover are more desirable than those that yield wholesale cuts excessively finished, rough or patchy. Fat deposition begins over the rib and loin areas of beef cattle and spreads down over the round and chuck regions as additional fat is laid down. Thus the two most valuable cuts, the rib and loin, are most susceptible to becoming wasty when cattle are fed to high degrees of finish.

Finish is one of the major factors employed in grading or evaluating the live beef animal. Fortunately finish is fairly highly associated

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1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by Robert A. Merkel, Associate Professor, Animal Husbandry, Kansas State College.

with carcass quality, particularly marbling, the quality factor receiving the major emphasis in grading the top beef grades. Since finish in live cattle bears a reasonably good association with carcass grade, attempts to evaluate or measure this characteristic in the live animal is important to the beef producer and cattle buyer. The only practical method available today is visual observation and handling characteristics. The somascope, antipyrine and tritium, although useful as research tools are not adapted for practical application as yet.

Carcass value or grade is largely determined by the quality factors; the most difficult factor to detect in the live animal. There are, however, several guides which aid in evaluating these quality factors in live cattle. Finish, and its contribution to value or grade has already been discussed. The age of the animal at the time of slaughter has an influence on the value of the carcass or wholesale cut. The older more mature carcasses generally yield somewhat darker colored, slightly less tender beef than the younger, more youthful cattle. I do not have reference to cattle older than three and one-half to four years of age which are not eligible for the grades above U. S. Commercial. However, variation in the degree of maturity exists within the U. S. Good, Choice and Prime grades so that the palatability factors, particularly tenderness is influenced by the quality of the lean. Consequently, a higher degree of quality is required by the Federal grade standards for the more mature segment than the more youthful carcasses which usually are sufficiently tender and juicy even though they possess lower degrees of quality. Generally the younger carcasses are lighter weight cattle so weight of the cattle has some influence upon value, but value is most markedly affected by weight in the heavier, less popular weight ranges, particularly in some areas of the country and during some seasons of the year.

Marbling of the fat dispersed within the lean is more highly associated with value than any other quality factor. Palatability usually parallels the degree of marbling and to a greater extent than the other quality factors. Unfortunately there is no reliable indicator of marbling in the live animal except that within limits the degree of finish is most closely associated with marbling.

The color of the lean affects the value of beef since the consumer usually associates dark colored beef with the more mature animals; consequently, she prefers the brighter colored lean. However, factors other than age influence color of lean, but these usually are not detectable in the live animal. Color of fat, although not considered in the Federal grade standards unless quality of fat is involved, definitely receives consumer resistance when yellowness or an indication toward yellowness is apparent, thus lowering the value of the carcass or cut. The color of fat cannot be detected in the live animal, but certain feeds are known to cause yellow fat; therefore, one can use the feeding history of the cattle as a guide to color of fat if the feed history is known.

Texture refers to the coarseness or fineness of the grain of the lean. Coarse texture is usually associated with a lack of tenderness and

advanced stages of maturity and vice versa. Fineness of texture generally parallels the extent or quantity of the other quality factors present and influences value accordingly.

Firmness of the lean influences the value of beef as it reflects consumer resistance; i.e., a lack of firmness or soft, watery lean meets consumer resistance. Firmness of fat or the lack thereof likewise contributes to decreased value. Firmness of the lean as well as firmness of fat are not detectable in live cattle.

The influence of conformation, finish and quality factors upon carcass value have been discussed above and it is apparent that quality is the greatest factor involved, followed by finish and conformation in that order, respectively. However, excessive finish may exert a very marked influence upon value which is not reflected in carcass grade. In other words, even though two carcasses may grade average choice for instance, there can be several cents difference in price per pound between the two carcasses, resulting from excessive fat which will have to be trimmed away by the retailer. Heifers usually sell in the neighborhood of $2.00 per hundred weight less than steers of comparable grade because heifers produce fatter carcasses.

It becomes apparent that an evaluation of the live animal in terms of carcass value is very difficult with the criteria we have at our disposal today. Experimentation might well begin with establishing the importance of each of the quality, finish and conformation factors upon palatability factors. Further research is then needed to more accurately detect these carcass value characteristics in the live animal.

REPORT OF GROUP SESSION I
(Performance Testing - Beef Cattle)

Chairman - Henry P. Holzman, South Dakota
Secretary - Richard M. McWilliams, Iowa

Each of the States represented at the Regional Conference reported on the amount and type of work being done in beef cattle production testing in their State. Indiana reported particularly on their Gold Medal Calf Award which is in its 20th year of operation in that State. They have some 1,300 cooperators with some 600 calves entered with records for this particular award. Illinois reported that 3,500 to 5,000 calves were weighed in 1956 and records obtained. A large percent of the herds involved in the Illinois program are purebred with only a few commercial. Missouri has had under way for a number of years their 500-pound Calf Club and are considering going deeper into the program of production testing in which they will keep and get more complete records. Michigan as yet has not started a performance testing program but are planning to get a program under way within the near future. Ohio reported that they have no official testing program at this time but that an official State steering committee had been appointed to plan a program for the State of Ohio. Minnesota reported no program in progress at the present time. Iowa reported a start in a program with about equal numbers of purebred and commercial herds involved at the present time. Oklahoma started a program four years ago and in 1956 had 87 cooperators with some 10,000 cows involved and their cooperators were mostly purebred breeders. They instituted an on-the-farm feeding program with 140-day feeding period involved and have set up their standards for weaning weights and the rate of gain on their feeding program depending upon the type of feeding program followed. Oklahoma has also organized a State association and the rules contain one point of particular interest which is: to be a member of the State association a cattle man has to be keeping production testing records. They also reported that they have had interest in setting up county bull associations around over the State. Oklahoma has a State bull station at the present time and their standards are that the bull has to gain 2.6 pounds per day or better or score 86 or better to get out of the station into the sale. South Dakota for a number of years has had a production testing program starting out mainly with purebred breeders and more recently have had participation of commercial breeders. They have also organized a State association with the purpose that as the performance testing program develops within the State there will be need for additional help other than extension people. The State association would be one method of providing funds for hiring additional personnel to get some of the work done that is involved in production testing.

Considerable time was spent discussing the program and procedures used in Oklahoma and South Dakota as they have pioneered the performance testing in the area and have had a chance to go over some of the problems that had been encountered and some of the programs that have developed to help overcome these problems.

Considerable discussion was held on methods, standards and procedures used by the different States. It was evident that each State has had his own ideas on how a program should be conducted and there was considerable variation in the type of standards and methods used in developing the program within each State. Considerable discussion involved the heritability of the various factors, such as, weaning weight, gaining ability, type, conformation and other factors that are involved in developing the program of performance testing in beef cattle. There was some difference of opinion as to the importance of these factors and as a result the group more-or-less agreed that the man in research can probably give us most help in our performance testing program within the various States on methods, procedures, and factors that can be used and will stand up under actual practice on our farms and ranches in beef cattle performance testing.

No conclusions were drawn nor were definite recommendations made on how programs should be conducted within the various States, but the following ideas seemed to be paramount throughout the discussion.

1. That we need more information from our research people before we can be truly effective in beef cattle performance testing.

2. Certification on performance testing will have to be tied in with the college and extension service to be most effective.

3. That there is a difference in programs and the standard used in the various States, and we would expect such differences. However, there was some feeling that there are some factors that might be standardized within the region so that as we read reports on various States we would have a better understanding of what the standards mean. The particular standard that was considered in this light was the type or system of scoring or grading cattle. It was felt that if all the States had the same system of grading and followed somewhat the same standards it would be much easier for someone from without the State to know about the kind of cattle and a little bit more about the plans if such a system was more-or-less standardized.

4. That a State or central bull testing station was desirable, but that it should be considered more-or-less only an indicator or directional finder as not enough bulls could be tested in one central station to really have much of an effect upon total cattle population within any one State. The feeling was that there should be additional stations throughout the area or that on-the-farm programs might be followed if we expected to really increase the numbers of cattle and bulls that have been actually tested under controlled conditions.

5. That indexes have been used in one or two of the States but there was lack of agreement on whether or not standards or indexes should be used so that we might possibly compare one herd with another or herds from one State to another.

6. That beef cattle performance testing should be encouraged and pushed along as rapidly as possible within each of the States and as a program develops facilities and funds should be available so that additional personnel might be available to handle the load. That such additional personnel should be provided for by the breeders themselves, either through an organization or some such other method.

The above points are listed only in the order of discussion and not in order of importance.

Some additional comments that came out of the discussion and struck agreement were that:

1. A purebred man probably won't go ahead until the commercial man insists upon records on bulls and replacement cows and heifers.

2. That performance testing will improve the sale of good cattle and possibly lower or spoil the sale for the poorer cattle.

3. McDonald of Indiana reported that one breeder was able to increase his bull prices because he had records on the bull as well as on the sire and dam of the bull. This would indicate that commercial people and purebred people alike have more understanding and greater appreciation of performance records and the ultimate effect of improving beef cattle.

4. Henry Holzman of South Dakota pointed out that this is not a program that will give improvement in beef cattle production in a short period of time. That it will take a number of years to really improve the productive ability and gaining ability of cattle within a herd. He suggested that to speed up the process in a commercial man herd, one method might be to sell the bottom one-half of the cows in a herd as far as productive ability or weight of calves were concerned and then replace with unselected heifers from another source. This would mean with the average and range of production ability of the unselected heifers, that about 3/4 of the cow herd would then be above average in productive ability.

REPORT OF GROUP SESSION II
(Performance Testing - Swine)

Chairman - E. C. Miller, Michigan
Secretary - Herbert M. Barnes, Ohio

Purpose: To consider the various methods used in swine performance testing, and to explore the possibility of a higher degree of uniformity in the several State programs.

Situation:

1. Several approaches to performance testing are being made. It is not known which method is most effective. All are making a contribution to general swine improvement. Further work with each method is needed before the method can be appraised.

2. Testing on evaluation stations focus industry attention on the meat-type hog and provide a strong educational opportunity.

3. Limited testing facilities provide limited numbers of tested sires and dams for use by the industry.

4. Uniformity of testing standards and methods in State extension programs is difficult to achieve because:

   (a) The extension worker develops the program in cooperation with hog farmers, and their decisions become a part of the program.

   (b) The extent of the testing, especially in the carcass, depends upon available facilities. States depending on commercial slaughter facilities are frequently limited in securing detailed carcass analysis.

Suggestions:

1. States are urged to establish more testing facilities, both rental and local.

2. The station testing program must be accompanied by on-the-farm testing programs. These should include:

   (a) Sow performance
   (b) Weighing plan for daily gains or weight for age
   (c) Probing best performing litters
   (d) Probing litter mates to station tested pigs
   (e) Type and soundness scoring

3. Extension workers have responsibility in assisting breed certification programs. They can also exert a moderating influence when completion is over-emphasized.

4. In station testing litter full sib samples are preferred because:

   (a) Carcass information is available before littermates are used for breeding.

   (b) Same information can be used as a progeny test.

   (c) Can be used as pedigree information.

   (d) Information on a litter can be used on future litters of same matings.

   (e) Correlation of genotype between littermates provides opportunity for improvement if performance is measured on litter representatives.

5. Testing programs should secure complete carcass cutout data when possible.

6. Research on other carcass value indices, such as the completely skinned ham, should be expanded.

7. In States that have similar testing or improvement programs, minor adjustments in methods and standards may be made in the interest of uniformity.

REPORT OF GROUP SESSION III
(Performance Testing - Sheep)

Chairman - Henry Mayo, Indiana
Secretary - V. E. McAdams, Kansas

I. Available Information

A. Small amount of experience available

1. Wisconsin and Michigan have programs in operation
2. Others are just in the development stage

B. Small amount of research work available

1. Genetics

a. Heredity of carcass traits
b. Heredity of growth rate in mutton type sheep

2. Meats

a. Ideal carcass
b. Factors for accurate, practical measure of carcass value

C. Lack of sufficient information causes reliance on work with other species

1. Production testing
2. Progeny testing

D. Types of flocks in North Central Region

1. Purebred flocks
2. Commercial

a. Range flocks
b. Farm flocks

(1) Raise replacements
(2) Buy replacements

II. Possible Testing Programs

A. Purebred flocks

1. Production testing

a. Growth rate

(1) 120-day adjusted weight
(2) Yearling weight on potential breeding stock

b. Wool production

(1) Weight
(2) Value

(a) Staple length
(b) Grade

c. Twinning ability
d. Type score (soundness also)

2. Progeny testing (Breeding ram to 5-10 ewes, etc.)

a. Growth rate of lambs
b. Carcass value

B. Range flocks
Select best ewes and breed to top rams for replacements

C. Farm flocks (Keep replacements)

1. Growth rate

a. 120-day adjusted weight
b. Yearling weight on potential replacements

2. Wool production

a. Weight
b. Value

(1) Staple length
(2) Grade

3. Twinning ability

D. Farm flocks (Buy replacements)
Growth rate (120-day adjusted weight)

III. <u>How flock owner can use this information</u>

A. Production testing

1. To cull flocks
2. To select replacements
3. Information can be used best in own flock

B. Progeny testing

1. To select rams

C. Records are an accurate guide for culling and selection purposes. Combine with your opinion of animal's type and soundness.

IV. <u>This is a summary of possibilities, not of a final program.</u>

A smaller amount of research work is available for use in establishing a complete sheep production testing program. This group recommends that animal breeders continue and expand their work in regard to heritability of certain traits such as those factors affecting carcass value, rate of gain, etc. We would also suggest that meats research be expanded in order to determine factors which will be more accurate indications of the ideal lamb carcass.

A performance testing program for sheep should extend from the purebred flocks through the commercial flocks in order to attain maximum results.

WHERE DO WE GO FROM HERE? 1/

Working conferences such as this one has been, cannot help but be of great benefit to the individuals who attend. Extension animal husbandmen from many States stand to benefit greatly by being able to weigh their methods and accomplishments against those of workers in other areas. Published news stories and reports help to keep workers posted on the progress of various programs, it is true. Often too much or too little emphasis is put on certain aspects of these programs by the agricultural press however. This is not a criticism of reporters who prepare these reports -- it is inevitable since they are not animal husbandry specialists and have no way of knowing the relative importance of the various livestock production programs. Only by meeting and working together, as for example on scoring bulls, can uniformity be brought about.

Many problems need to be attacked on an area basis, and each extension worker can profit by the exchange of experiences to improve his own methods, techniques and efficiency. The programs promoted will also benefit from these mutual study, work and evaluation sessions.

It occurs to me that certain dangers also beset conferences of this kind, which should be recognized and avoided. I have reference to the danger of too much unification of effort. There is a tendency on the part of some workers to adopt too closely the methods and techniques of others. Often they may abandon better methods for the sake of change. Extension teaching and demonstration methods should not be formalized, standardized, unified or straight jacketed to the extent of bringing about the loss of individuality, imagination, and individual initiative by workers. This is true of any kind of teaching and teachers. Perhaps the danger is even greater and more serious among experiment station workers.

If workers will attend conferences of this kind with minds open enough to accept and use bits of information which will improve their own program, but with minds questioning enough to cause them to retain the most effective parts of their own programs, then the maximum amount of good will result from the mutual exchange of thoughts and methods.

1/ Presented at North Central Region Livestock Production and Marketing Conference, Kansas State College, Manhattan, Kansas, May 8, 1957, by Rufus F. Cox, Head, Animal Husbandry Department, Kansas State College.

REPORT OF RESOLUTIONS COMMITTE

OF

NORTH CENTRAL REGION LIVESTOCK PRODUCTION AND MARKETING CONFERENCE

May 6-8, 1957

BE IT RESOLVED: That this group extend to the entire staff at Kansas State College, including Dean Weber, Dr. Cox and his staff in the Department of Animal Husbandry, and especially to the livestock specialists, our sincere appreciation for their hospitality and the splendid program to which they contributed so much;

To the guest speakers from Kansas State College and other institutions our heartiest thanks for their very excellent presentations;

To our tour hosts, Mr. Rogler and Mr. Moxley, for their warm hospitality;

To the program committee for the planning and execution of a most interesting program;

And finally, to the Extension Directors of the North Central States for making it possible for this opportunity to secure and exchange information which will be most helpful to us in our work in our own States.

Harry G. Russell, Illinois, Chairman
Graydon L. Blank, Michigan
Herbert M. Barnes, Ohio

Report of the Committee Adopted by the Conference, May 8, 1957

LIST OF PERSONS IN ATTENDANCE

ILLINOIS

University of Illinois, Urbana, Ill.
G. R. Carlisle, Extension Specialist, Animal Science
Robert L. Coppersmith, Extension Specialist, Swine Marketing
Willis F. Nickelson, Extension Specialist, Animal Science
Harry G. Russell, Extension Specialist, Animal Science
Donald E. Walker, Extension Specialist, Animal Science

INDIANA

Purdue University, Lafayette, Ind.
Vernon C. Bell, Associate Extension Specialist, Animal Husbandry
Russell A. Brower, Assistant Extension Specialist, Animal Husbandry
Charles J. Heidenreich, Associate Extension Specialist, Animal Husbandry
Richard Hollandbeck, Associate Extension Specialist, Animal Husbandry
Kenneth G. MacDonald, Associate Extension Specialist, Animal Husbandry
Henry H. Mayo, Associate Extension Specialist, Animal Husbandry

IOWA

Iowa State College, Ames, Iowa
Emmit H. Haynes, Extension Specialist, Animal Husbandry
Richard M. McWilliams, Extension Specialist, Animal Husbandry

KANSAS

Kansas State College, Manhattan, Kans.
Rufus F. Cox, Head, Animal Husbandry Department
Paul W. Griffith, Associate Director, Extension Service
Don L. Good, Associate Professor, Animal Husbandry
Harold E. Jones, Director, Extension Service
V. E. McAdams, Extension Specialist, Animal Husbandry
Robert A. Merkel, Associate Professor, Animal Husbandry
Wendell A. Moyer, Extension Specialist, Animal Husbandry
Lot F. Taylor, Extension Specialist, Animal Husbandry
A. D. Weber, Dean of Agriculture

MICHIGAN

Michigan State University, East Lansing, Mich.
Graydon L. Blank, Extension Specialist, Animal Husbandry
Wilton L. Finley, Extension Specialist, Animal Husbandry
J. A. Hoefer, Professor, Animal Husbandry
E. C. Miller, Extension Specialist, Animal Husbandry
Ralph E. Morrow, Extension Specialist, Animal Husbandry
Harry E. Moxley, Extension Specialist, Animal Husbandry

MINNESOTA

University of Minnesota, St. Paul, Minn.
Robert E. Jacobs, Extension Animal Husbandman
Henry G. Zavoral, Extension Animal Husbandman

MISSOURI	University of Missouri, Columbia, Mo. Glenn A. Grimes, Extension Economist, Marketing Elmer R. Kiehl, Professor, Agricultural Economics John F. Lasley, Professor, Animal Husbandry William E. Pugh, Extension Animal Husbandman James W. Reynolds, Extension Economist, Marketing
NEBRASKA	University of Nebraska, Lincoln, Nebr. W. W. Derrick, Extension Specialist, Animal Husbandry Ted H. Doane, Extension Specialist, Animal Husbandry K. C. Fouts, Extension Specialist, Animal Husbandry Paul Q. Guyer, Extension Specialist, Animal Husbandry George A. Young, Professor, Animal Pathology
NEW MEXICO	New Mexico College of Agriculture, State College, N. Mex. John H. Knox, Head, Animal Husbandry Department
NORTH DAKOTA	North Dakota Agricultural College, Fargo, N. D. Melvin A. Kirkeide, Assistant Extension Agent, Livestock
OHIO	Ohio State University, Columbus, Ohio Herbert M. Barnes, Extension Animal Scientist (Swine) James H. Warner, Extension Animal Scientist (Beef)
OKLAHOMA	Oklahoma State University, Stillwater, Okla. James C. Hillier, Professor, Animal Husbandry Clyde M. Reed, Extension Livestock Specialist James A. Whatley, Jr., Professor, Animal Husbandry
SOUTH DAKOTA	South Dakota State College, College Station, S. D. LaVerne J. Kortan, Associate Extension Livestock Specialist James J. O'Connell, Extension Animal Husbandman Agricultural Extension Service, Rapid City, S. D. Henry P. Holzman, Associate Extension Animal Husbandman
USDA	Federal Extension Service, USDA, Washington 25, D. C. Charles E. Bell, Jr., Chief, Animal Industry Branch Agricultural Research Service, USDA, Room 101, Animal Husbandry Hall, University of Nebraska, Lincoln, Nebr. Keith E. Gregory, Regional Coordinator, Beef Cattle Research
WISCONSIN	University of Wisconsin, Madison, Wis. Vern L. Felts, Extension Specialist, Animal Husbandry